



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,470	11/14/2003	Robert Scott Downing	67,036-036; B05813-AT1	1924
26096	7590	11/04/2005	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			NGUYEN, TUAN N	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/713,470	<b>Applicant(s)</b> DOWNING ET AL.	
	<b>Examiner</b> Tuan N. Nguyen	<b>Art Unit</b> 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 12-17, 23, 24- 26 is/are rejected.
- 7) ☒ Claim(s) 7-11 and 18-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/14/2003</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of 35 U.S.C. 102(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1,2, 5,6, 12,13, 16,17 are rejected under 35 U.S.C. 102(a) as being unpatentable over Byren et al. (US 6690696).

With respect to claims 1, 12 Byren et al. '696 discloses a cooling device having a heat producing source that emits fluorescent energy (ABSTRACT)(Col 2: 1-65), with at least one layer of fluorescent energy absorbing material positioned adjacent to the heat source (Fig 2; Fig 3-7), and a coolant fluid contact with at least one layer of fluorescent energy absorbing material, and maintain temperature of heat source (Fig 3: 10,20,30,40)(Fig 4-7)(Fig 9: 10, 12, 14, 19, 20)(Fig 11b) (Col 1-2). Since claim 12 recites the same or identical elements/limitations it is inherent to use patent '696 to recite the method for cooling a heat producing source, product by process.

With respect to claims 2, 13 (Col 2: 30-35) disclose the use of sapphire for the cooling structure.

With respect to claims 5, 16 (Fig 3-7: 20, 30") (Fig 12: laser slab) show the diode pumped laser slab.

With respect to claims 6, 17 (Fig 8,9,10,11a/b) show a plurality of stacked layers including fluid orifices and fluid channels to define fluid flow pathway of coolant through the stacked layers (Fig 8) (Fig 9: 10, 12, 14, 19, 20) (Fig 11a: coolant flow, inlet hole).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
4. Claims 3-4, 14-15, 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byren et al. (US 6690696).

With respect to claims 3, 4, 14, 15, the claims further require at least one textured surface or a coating for diffusing fluorescent light. Byren et al. '696 did not directly disclose the textured or coating surface for diffusing fluorescent light, however Byren '696 did disclose the diffusion and absorption of the fluorescence (Col 3: 30-32, 60-65)(Col 4: 40-51). It has been

Art Unit: 2828

held that where the general conditions of a claim are disclosed in the prior art, omission of an element and its function in a combination where the remaining elements perform the same functions involves only routine skill in the art. *In re Karlson*, 136 USPQ 184.

With respect to claim 23 Byren et al. '696 discloses a cooling device having a heat producing source that emits fluorescent energy (ABSTRACT)(Col 2: 1-65), having plurality of stacked layers adjacent to the heat source (Fig 2; Fig 3-7) having plurality of orifices and channels define fluid pathway (Fig 9: 10, 12, 14, 19, 20), where the coolant medium is contact with the stacked layers and maintain temperature of heat source (Fig 3: 10,20,30,40)(Fig 4-7)(Fig 9: 10, 12, 14, 19, 20)(Fig 11b) (Col 1-2). The claim further requires at least one groove formed in first layer to increase surface exposure to the laser or extended through plurality of stacked layers. It has been held that where the general conditions of a claim are disclosed in the prior art, omission of an element and its function in a combination where the remaining elements perform the same functions involves only routine skill in the art, in this case the groove or the inlet holes are similar in function by keeping the laser layers cool. *In re Karlson*, 136 USPQ 184.

With respect to claims 24, 26 (Col 2: 30-35) discloses the sapphire or other material that can be used to provide optimum operation, and the layers are bonded together (Col 3: 30-32) (Fig 1, Fig 10).

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Byren et al. (US 6690696) in view of Takigawa et al. (US 6865200).

Byren et al. '696 discloses the above, the claim further require groove extends entirely through first and at least a second layer of stacked layers. Takigawa et al. '200 discloses and shows a cooling device having groove extends through the layers of coolant device (ABSTRACT) (Fig 1: 4,5)(Fig 2,3: 4,5. It would have been obvious to one of ordinary skill in the art to provide Byren et al. '696 the groove element as taught or suggested by Takigawa et al. '200 to increase the cooling efficiency of the cooling device, such as increase the incoming or outgoing circulating fluid contacting the plates.

***Allowable Subject Matter***

6. Claims 7, 18 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The references of the record fail to teach or suggest the cooling element and method thereof:

**Claims 7, 18:**

Where at least one layer of fluorescent energy absorbing material includes at least one storage channel having a thermal energy storage material disposed therein.

**Claim 25:**

Wherein a groove extends entirely through into plurality of stacked layers.

***Communication Information***

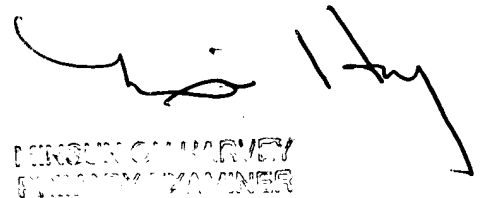
Art Unit: 2828

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen

  
HARVEY MINSUN  
SUPERVISOR